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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/214,001	12/24/98	KUDO H	P17380

IM52/1010

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EXAMINER	
VARCOE JR, F	
ART UNIT	**PAPER NUMBER**
1764	18

DATE MAILED: 10/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)

1- File Copy

Office Action Summary	Application No. 09/214,001	Applicant(s) Kudo et al.
	Examiner Varcoe	Art Unit 1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Jul 31, 2001

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-30 is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☒ Claim(s) 2-10 and 12-23 is/are allowed.

6) ☒ Claim(s) 1, 11, and 24-30 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's amendment of July 31, 2001, has been received and carefully considered. The 35 U.S.C. 112 rejections have been withdrawn. Claims 1-30 remain active. Following withdrawal of the §112 rejections, claims 2-10 and 12-23 are allowed. Claims 1, 11 and 24-30 remain rejected.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 11 and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. EP 0 199 878 A2 in view of Tanizaki JP 07126001 A. The grounds for the rejection have been presented in an earlier Office action.

Allowable Subject Matter

5. Claims 2-10 and 12-23 are allowable.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 recites a concentric arrangement of the reforming unit, the shift reactor and the CO oxidizer, with the CO oxidizer on the outside. The prior art does not disclose or fairly suggest this arrangement.

Claims 3-10 and 19 depend from claim 2.

Claim 12 recites a shift reactor arranged so as to be concentric with (i.e. coaxial with) a cylindrical combustion chamber. In addition, the claim recites a CO oxidation unit arranged so as to be concentric with (i.e. coaxial with) the combustion chamber, and located around the shift

reactor. The prior does not disclose or fairly suggest a CO oxidation reactor arranged around and coaxial with a shift reactor.

Claims 13-17 are allowable because they depend from claim 12.

Claim 18 recites a shift reactor arranged so as to be concentric with (i.e. coaxial with) a cylindrical combustion chamber. In addition, the claim recites a CO oxidation unit arranged so as to be concentric with (i.e. coaxial with) the combustion chamber. The prior does not disclose or fairly suggest a CO oxidation reactor arranged around and coaxial with a shift reactor.

Claim 20 recites a shift reactor arranged so as to be concentric with (i.e. coaxial with) a cylindrical combustion chamber. In addition, the claim recites a CO oxidation unit arranged so as to be concentric with (i.e. coaxial with) the combustion chamber. Further the claim recites the shift reactor and the CO oxidation unit placed in ducts located around the main exhaust chamber. The prior art does not disclose or fairly teach placing the shift reactor and the CO oxidation reactor inside ducts and arranging the ducts around a main oxidation chamber.

Claims 21-23 are allowable because they depend from claim 20.

Response to Arguments

6. Applicant's arguments filed have been fully considered but they are not persuasive.

With regard to claim 1, Applicant notes that Murray discloses a second shift reactor external to the main reactor, the second shift reactor providing an additional shift reaction. Since Applicant's claim 1 does not show such a second shift reactor, it is argued that starting

with Murray, one could not arrive at the invention of claim 1, thus indicating insufficient motivation to combine so as to get the apparatus of claim 1.

Examiner has asserted that the rejection does not have to rely on all parts of a disclosure in a primary reference for a §103 rejection. In this case, the rejection makes use of the internal shift reactor of Murray and does not use the additional external shift reactor. The external shift reactor can be present or absent. It does not matter. Claim 1 recites an internal shift reactor, and Murray provides an internal shift reactor. Claim 1 therefore reads on the modified disclosure of Murray, with or without Murray's extra shift reactor. Murray may choose to add a second shift reactor not mentioned in claim 1, just as Murray has chosen to add a pump (97), also not mentioned in claim 1. These additions do not alter the fact that there is an internal shift reactor both in Murray's disclosure and in claim 1. It may turn out that Murray's internal shift reactor does not remove enough CO. All the more motivation to add the CO oxidizer of Tanizaki downstream from the internal shift reactor.

Applicant asserts that if one were to add a CO oxidation unit to Murray, it would have to be placed downstream from the external shift reactor (104). Examiner replies that although one might be motivated to place a CO oxidization unit there, since Tanizaki discloses placing an oxidation unit downstream from a shift reactor, since there is an internal shift reactor present as well as a an external shift reactor, Tanizaki can be understood as directing one skilled in the art to place the CO oxidation unit just downstream from the internal shift reactor and upstream from any external shift reactor. Applicant speaks of "the shift reactor" as if the internal and external

shift reactors are inseparable. There are tow shift reactors in Murray. There is no indication in the art that the external shift reactor must be immediately downstream from the internal shift reactor with no intervening CO oxidation reactor. The tow shift reactors can be treated as separate.

Applicant asserts that Tanizaki does not disclose the CO oxidation unit arranged that an inside surface is indirectly heated by heat transfer from the heat source. It appears to Examiner that Figure 2 of Tanizaki discloses the form of indirect heating. The heating layer(62) adjoins the denaturing (shift) layer (5). At the right of Figure 2, the denaturing (shift) layer (5) is shown as having an outside surface arranged to obtain atmospheric cooling of the outside surface.

Applicant mentions the temperatures of operation in an explanation of why Applicant's apparatus is arranged as it is. Further, claim 30 contains temperatures of operation along with structural features. It is examiner's position that the temperatures are indications of intended use and do not structurally distinguish the invention from the prior art.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Varcoe, whose telephone number is (703) 306-5477. The examiner can normally be reached Monday through Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode, can be reached on (703) 308-4311.

The FAX telephone number for this Group Art Unit is (703) 305-3599 (for Official papers after Final), (703) 305-5408 (for other Official papers) and (703) 305-6357 (for Unofficial papers).

When filing a FAX in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite processing your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

RV
October 8, 2001

Hien Tran

HIEN TRAN
PRIMARY EXAMINER